BTEC Assignment Brief

Qualification	Pearson BTEC International Level 3 Diploma in Engineering Pearson BTEC International Level 3 Diploma in Digital Engineering Pearson BTEC International Level 3 Extended Diploma in Engineering Pearson International BTEC Level 3 Extended Diploma in Computer Engineering
Unit number and title	**Unit 32: Computer System Principles and Practice**
Learning aim(s)	**B:** Examine how data is represented and manipulated in microprocessors to appreciate how computer systems function **C:** Examine the architecture and operation of microprocessors to appreciate how computer systems function
Assignment title	Hardware and Operating System Analysis
Assessor	
Issue date	
Hand in deadline	

Vocational Scenario or Context	You are a second year computer systems engineering apprentice and you have been asked by your supervisor to produce a report on the hardware that is currently employed in the companies' computers together with an examination of the operating system. The company thinks that there are better systems available and want to explore other possibilities.

Task 1	**Hardware and operating systems analysis** You must produce a report that includes the following: 1) a critical comparison of the von Neumann microprocessor architecture against other alternatives that focuses on how numeric and alphanumeric data is handled together with a consideration of the problems associated with the von Neumann architecture and how the other architecture considered overcomes these problems thereby improving performance, 2) a detailed explanation of how this data is manipulated by the architecture/operating system to include examples using numerical data and the function and operation of micro-architecture, registers and register handling. The report will be well presented and written, and be capable of being understood by a third party who may not be a computer systems engineer.

Checklist of evidence required	1) A report.
Criteria covered by this task:	
Unit/Criteria reference	To achieve the criteria you must show that you are able to:
32/BC.D2	Critically analyse the operation of a microprocessor demonstrating how data is represented and manipulated and how the architecture affects performance.
32/B.M2	Discuss accurately, using examples, how data is represented and manipulated in a microprocessor.
32/C.M3	Discuss accurately the standard architecture of a microprocessor and how an instruction is typically executed in a microprocessor
32/B.P4	Explain, using examples, how different types of data are represented in a microprocessor and include number conversions and binary manipulation
32/C.P5	Explain the standard architecture of a microprocessor.
32/C.P6	Explain how an instruction is typically executed in a microprocessor.
Sources of information to support you with this Assignment	**Books** Adebiaye R.S. and Owusu T. D. (2013) Network Systems and Security Principles and Practice, CreateSpace Independent Publishing Platform, ISBN 978-1482626713 Anderson T. and Dahlin M. (2014) Operating Systems: principles and Practice, Recursive Books Ltd, ISBN 978-0-9856735-2-9 Clements A. (2006) Principles of Computer Hardware, Oxford University Press, ISBN 978-0-19-927313-3 Fan X. (2015) Real-time Embedded Systems: design Principles and Engineering Practices, Newnes/Elsevier, 978-0-12-801507-0 Marz N. and Warren J. (2015) Big Data: Principles and best practices of scalable real-time data systems, Hanning, ISBN 978-1-617290343